

CLAIMS

[1] A method for hydraulic transfer printing, comprising floating a transfer sheet comprising a polyvinyl alcohol polymer film and a print layer formed thereon on a surface of an aqueous solution while directing the print layer upward, and then pressing an article against the surface of the aqueous solution to transfer the print layer to the article, wherein the aqueous solution has a surface tension of 45 mN/m or less and the transfer sheet exhibits an extension ratio of 1.30 or less during the transfer.

[2] The method for hydraulic transfer printing according to claim 1, wherein the aqueous solution has a surface tension of 15 mN/m or more.

[3] The method for hydraulic transfer printing according to claim 1 or 2, wherein the transfer sheet exhibits an extension ratio of 1.20 or less during the transfer.

[4] The method for hydraulic transfer printing according to any one of claims 1-3, wherein the aqueous solution contains from 0.001 to 3% by weight of a surfactant.

[5] The method for hydraulic transfer printing according

to any one of claims 1-4, wherein the aqueous solution has a solid concentration of from 0.001 to 5% by weight.

[6] The method for hydraulic transfer printing according to any one of claims 1-5, further comprising applying an ink activating solvent before the floating of the transfer sheet on the surface of the aqueous solution.

[7] The method for hydraulic transfer printing according to any one of claims 1-6, wherein a time taken from the floating of the transfer sheet on the surface of the aqueous solution to the pressing of the article against the surface of the aqueous solution is from 40 to 240 seconds.

[8] A hydraulic transfer printing base film comprising 100 parts by weight of a polyvinyl alcohol polymer and from 0.05 to 5 parts by weight of a surfactant, wherein an aqueous solution at 20°C containing 0.01% by weight of said surfactant has a surface tension of 40 mN/m or less and the base film exhibits an extension ratio of 1.6 or less when the base film is floated on an aqueous solution at 30°C including 0.05% by weight of the base film dissolved therein.

[9] The hydraulic transfer printing base film according

to claim 8, further comprising a plasticizer in an amount of from 0.5 to 10 parts by weight based on 100 parts by weight of the polyvinyl alcohol polymer.

[10] The hydraulic transfer printing base film according to claim 8 or 9, further comprising starch in an amount of from 0.1 to 15 parts by weight based on 100 parts by weight of the polyvinyl alcohol polymer.

[11] The hydraulic transfer printing base film according to any one of claims 8-10, further comprising boric acid or a derivative thereof in an amount of from 0.1 to 5 parts by weight based on 100 parts by weight of the polyvinyl alcohol polymer.

[12] The hydraulic transfer printing base film according to any one of claims 8-11, wherein a water content thereof is from 1.5 to 4% by weight.

[13] The hydraulic transfer printing base film according to any one of claims 8-12, wherein a retardation thereof is 40 nm or less.

[14] The hydraulic transfer printing base film according to any one of claims 8-13, wherein a thickness thereof is

from 20 to 50 μm .

[15] The hydraulic transfer printing base film according to any one of claims 8-14, wherein a transverse shrinkage thereof is from 0.01 to 1.5% when a tension of 8.0 kg/m is applied in the longitudinal direction of the film at 50°C for one minute.

[16] The hydraulic transfer printing base film according to any one of claims 8-15, wherein a time (T_1), needed from a time when the base film is floated on the surface of an aqueous solution at 30°C including 0.05% by weight of the base film dissolved therein to a time when the film shrinks, is from 5 to 20 seconds.

[17] The hydraulic transfer printing base film according to any one of claims 8-16, wherein a time (T_2), needed until the base film dissolves completely in water at 30°C, is from 15 to 40 seconds.

[18] The hydraulic transfer printing base film according to any one of claims 8-17, wherein a ratio (T_1/T_2) of a time (T_1), needed from a time when the base film is floated on the surface of an aqueous solution at 30°C including 0.05% by weight of the base film dissolved therein to a

time when the film shrinks, to a time (T₂), needed until the base film dissolves completely in water at 30°C, is from 0.3 to 0.8.

[19] A transfer sheet comprising the hydraulic transfer printing base film according to any one of claims 8-18 and a print layer formed thereon.